SHRI MATA VAISHNO DEVI UNIVERSITY, KATRA
School of Electronics and Communication Engineering
B. Tech. (ECE) Minor II Examination (ODD) 2018-19

Entry No: 17BEC033

Date:

Total Number of Pages: [01]

Total Number of Questions: [01]

Course Title: Antenna & Wave Propagation

Course Code: ECL 2041

Time Allowed: 1.5 Hours **Max Marks: [20]**

Instructions / NOTE

i. Attempt All Questions.
ii. Support your answer with neat freehand sketches/diagrams, wherever appropriate.
iii. Assume an appropriate data / information, wherever necessary / missing.

	Section - A		
Q1.	(a) The characteristic impedance of the free-space is _____. (b) Directivity of the isotropic radiator is _____.	[01] [01]	CO1 CO2
Q2.	What do you mean by the following terms? (a) Radiation Intensity (b) Directivity (c) Polarization	[03]	CO3
	Section - B		
Q3.	In a medium characterized by $\sigma = 0, \mu = \mu_0, \varepsilon = 4\varepsilon_0$ and $E = 20\sin(10^8 t - \beta z)\bar{a}_y$ V/m, calculate β and $\bar{H}$.	[03]	CO1
Q4.	For an infinitesimally small radiator of length *dl*, operating at wavelength λ_0 in the free space, Surface current density **Js,** find the expression for the electric and magnetic field intensities in the far-field region.	[04]	CO4
Q5.	A magnetic field strength of 5μA/m is required at a point $\theta=90^0$, 2km from an antenna in air. Neglecting ohmic loss, how much power the antenna must transmit if it is a Hertzian dipole of length λ/25?	[03]	CO2
Q6.	(a) For a small antenna of length dl=λ_0/20 where λ_0 is the free space wavelength, find the radiation resistance Rr. (b) If loss resistance R_l=2Ω, find the efficiency of the antenna.	[03] [02]	CO5

Course Outcomes

1. Able to understand the basic operation of E.M. wave based application.
2. To design and analyze various types of antenna.
3. Understand the different propagation modes of EM wave.
4. Able to find suitability of antennas for different applications.
5. To understand the different types of antennas and their applications

CO	Questions Mapping	Total Marks	Total Number of Students (to be appeared in Exam)
CO1	1(a),3	04	62
CO2	1(b),5	04	62
CO3	2	03	62
CO4	4	04	62
CO5	6	05	62